In the Claims

CLAIMS

1. (Currently amended) A system for flushing at least one closed internal space of an objective, the flushing being performed by mixing at least two inert gasses in such a way that the refractive index resulting therefrom corresponds at least approximately to the refractive index of air; and

wherein the at least two inert gases are devoid of oxygen.

2. (Original) The system as claimed in claim 1, wherein air or synthetic air having 78-80% nitrogen (N_2) by volume and 20-22% oxygen (O_2) by volume is provided.

3. (Original) The system as claimed in claim 1, wherein the objective is provided as an exposure projection objective for semiconductor lithography.

4. (Currently amended) The system as claimed in claim 1, wherein in the case of use of two inert flushing gasses, the refractive index of one flushing gas is above that of air, and the refractive index of the second flushing gas is below that of air.

5. (Original) The system as claimed in claim 4, wherein nitrogen is used as first flushing gas, and an inert gas is used as second flushing gas.

6. (Original) The system as claimed in claim 4, wherein helium is used as inert gas.

7. (Original) The system as claimed in claim 4, wherein krypton is used as inert gas.

8. (Original) The system as claimed in claim 4, wherein xenon is used as inert gas.

9. (Original) The system as claimed in claim 6, wherein nitrogen in a volumetric fraction of 95 to 99.5% and helium in a volumetric fraction of 0.5 to 5% are used.

10. (Original) The system as claimed in claim 9, wherein helium in a volumetric fraction of 1.1 to 1.3, preferably 1.2% is used.

Claims 11-16 (canceled).

17. (Previously presented) The system as claimed in claim 1, wherein the at least two inert gases comprises only inert gases.

Claims 18-19 (Canceled).

20. (New) A method for flushing an objective, comprising:

providing an objective having at least two lenses forming a chamber within the objective; and

flushing the chamber with only inert gases in such a way that the refractive index resulting therefrom corresponds at least approximately to the refractive index of air.

21. (New) A method for flushing an objective, comprising:

providing an objective having at least two lenses forming a chamber within the objective; and

flushing the chamber with gases devoid of air in such a way that the refractive index resulting therefrom corresponds at least approximately to the refractive index of air.

22. (New) A method for flushing an objective, comprising:

providing an objective having at least two lenses forming a chamber within the objective; and

flushing the chamber with gases devoid of oxygen in such a way that the refractive index resulting therefrom corresponds at least approximately to the refractive index of air.

23. (New) The method as claimed in claim 22, wherein the flushing comprises flushing with only inert gases.

24. (New) The method as claimed in claim 22, wherein the gases are devoid of air.

25. (New) A method for adjusting optical characteristics of an objective, comprising:

providing an objective having at least two lenses forming a chamber within the objective; and

adjusting a refractive index of the objective in such a way that the refractive index resulting therefrom corresponds at least approximately to the refractive index of air by providing only inert gases within the chamber.

26. (New) A method for adjusting optical characteristics of an objective, comprising:

providing an objective having at least two lenses forming a chamber within the objective;

adjusting a refractive index of the objective by providing a first gas and a second gas within the chamber according to the following relationship:

$$N_{mix} = n_1 * q_1 + n_2 * q_2;$$

wherein $q_1+q_2=1$; N_{mix} is the refractive index of a mixture that includes the first and second gases; n_1, n_2 is the refractive index of the first and second gases, respectively; and q_1, q_2 is the fraction of the first and second gases, respectively; and

wherein N_{mix} corresponds at least approximately to the refractive index of air.

27. (New) A method for adjusting optical characteristics of an objective, comprising:

providing an objective having at least two lenses forming a chamber within the objective; and

adjusting a refractive index of the objective in such a way that the refractive index resulting therefrom corresponds at least approximately to the refractive index of air by providing a gaseous mixture within the chamber, the gaseous mixture comprising at least about 95% by volume of nitrogen.

28. (New) A semiconductor lithography method comprising:

providing an objective having at least two lenses forming a chamber within the objective;

cleaning the objective by flushing a first gas through the chamber; and

after the cleaning, providing a second gas within the chamber different from the first gas, wherein the refractive index of the second gas corresponds at least approximately to the refractive index of air.

29. (New) The method as claimed in claim 28, wherein the first gas comprises air.

30. (New) The method as claimed in claim 28, wherein the second gas comprises a gaseous mixture devoid of oxygen.

31. (New) The method as claimed in claim 28, wherein the first gas comprises only air and the second gas comprises only inert gases.